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DISTRIBUTION
UNIT MANGERS' MEETING
200 AREA GROUNDWATER AND SOURCE OPERABLE UNITS

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Ellen Mattlin ..... DOE-RL EAP (A2-15)
Mike Thompson ..... DOE-RL RP (A5-13)
Arlene Tortoso ..... DOE-RL RP (H0-12)
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Joan Woolard ..... BHI (H0-02)

Tim Lee ..... CHI (H9-02)
Virginia Rohay ..... CHI (H0-19)
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Mary Todd ..... CHI (H9-03)
Curtis Wittreich ..... CHI (H9-03)

Stuart Luttrell ..... PNNL (K6-96)
Mark Sweeney ..... PNNL (K6-81)

Administrative Record (2) ..... BHI (H0-09)

Please inform Chloe Brewster – BHI (372-9377)
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Meeting Minutes Transmittal/Approval
Unit Managers' Meeting
200 Area Groundwater and Source Operable Units
3350 George Washington Way, Richland, Washington
August 2000

APPROVAL: _____ Date Dec 13, 2000
Bryan Foley, 200 Area Unit Manager, DOE/RL (A5-13)

APPROVAL: _____ Date Dec. 18, 2000
Arlene Tortoso, Groundwater Unit Manager, DOE/RL (H0-12)

APPROVAL: _____ Date 12-26-00
Dennis Faulk, 200 Area Unit Manager, EPA (B5-01)

APPROVAL: _____ Date Dec. 29 2000
John Price, 200 Area Unit Manager, Ecology (B5-18)

Meeting minutes are attached. Minutes are comprised of the following:

Attachment 1	--	Agenda
Attachment 2	--	Attendance Record
Attachment 3	--	200 Area Current Action Log
Attachment 4	--	200 Area UMM Minutes – August 2000
Attachment 5	--	RCRA TSDs Interim Status of Purex Cribs 216-A-10, 216-A-38B, and 216-A-37-1
Attachment 6	--	Comparison of Maximum Carbon Tetrachloride Rebound Concentrations Monitored at 200-ZP-2 Soil Vapor Extraction Sites

Prepared by: _____ Date 9/26/00
Chloe Brewster, BHI GW/VZ Integration Project (H0-19)

Concurrence by: _____ Date 11/28/00
Bruce Ford, BHI GW/VZ Integration Project (H0-19)

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UNIT MANAGERS' MEETING AGENDA

3350 George Washington Way, Conference Room 1B-45
August 24, 2000

9:00 – 11:00 a.m. 200 Area

General (10 minutes)

- Outstanding Action Items
- Passive neutron geophysical tool demonstration at Borehole 299-W18-159 (216-Z-1A) Drain Tile/Field and Borehole 299-W18-179 (216-Z-12 Crib) in mid-September
- Update of five-year review

200-CW-1 Gable/B Pond and Ditches Cooling Water OU (10 minutes)

- Work Plan Status
- Remedial Investigation Report Status
  - Summary Results
  - Draft A transmittal 8/10/00 to Ecology; Regulator Review period 8/15-9/15, 2000
- IDW Status

200-CS-1 Chemical Sewer OU (5 minutes)

- Work Plan Status

200-CW-5 U Pond/Z Ditches Cooling Water OU (5 minutes)

- Work Plan Status

200-TW-1 Scavenged and 200-TW-2 Tank Waste OUs (5 minutes)

- Work Plan Status
  - Draft A submittal 8/18/00; Regulator Review 8/20-9/20, 2000

200-PW-2 Uranium-Rich Process Waste OU (5 minutes)

- Work Plan and DQO Schedule
  - DQO Status
  - Draft A Work Plan submittal 12/29/00; Regulator Review 1/01 – 1/31/01

200 Area Remedial Action Project (10 minutes)

- FY 2001 Work Scope Status

RCRA Groundwater Monitoring Program (40 minutes)

- 216-A-10, 216-A-36B, 216-A-37-1, Cribs RCRA groundwater monitoring briefing (PNNL)

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200-UP-1 (10 minutes)

- Status Operational Update
- Signing of Waste Management Plan

200-ZP-1 (10 minutes)

- Shutdown of Extraction Well 299-W15-37
- Status Operational Update
- Status of Regulator Review – EPA
- ITRD PITT Demonstration

200-ZP-2 (10 minutes)

- Status Monitoring Data Evaluations
- New Data

Groundwater and Source Operable Units Unit Managers' Meeting
Official Attendance Record – 200 Area
August 24, 2000

Please print clearly and use black ink

PRINTED NAME	ORGANIZATION	O.U. ROLE	TELEPHONE
William McMahon	CHI Geosciences	Data analysis	375-9434
Matt Mills	Ecology	200-CS-1	736-5721
Ted Wooley	Ecology	200 CW-1 O.U Mgr.	736-3012
Ron Jackson	BHI	Tech Deplogm	372-9255
JEFF ARMATROUT	BHI	PM-BHI GROUNDWATER	372-9183
MARY E. TODD	CHI	CHI TASK Lead CW-1, TW-1, TW-2	372-9030
Chris Cearlock	CHI	CHI CS-1 TASK Lead	372-9574
Bruce Ford	BHI	200 Area Lead	372-9242
Tim Lee	CHI	CHI-GW	372-9362
John Fruchter	PNNL	Ground water monitoring Project Manager	376-3937
Dennis Faulk	EPA		376-8691
Bryan Foley	DOE-RL	Source 200 Area Soils	376-7087
Arlene Tortoso	DOE-RL	Groundwater Remediation PM	373-9681
Jon Lindberg	PNNL	200-PO-1 200 Area RCRA	376-5005
Zelma Jackson	Ecology	200-UP Area	736-3024
Garrett Day	BHI	one of the GW Task Lead	732-9571

200 Area Unit Managers' Meeting
OPEN ACTION ITEMS & TRACKING

Action #	Action/Subject	Assigned To	Owed To	Assigned Date	Original Due Date	Adjusted Due Date	Date Complete	Status
1	Set up meeting between Foley and Mills to discuss 200-CS-1 work plan comments for first week in September.	Foley	Mills	8/24/2000				
2	Faulk to provide approval letter of 200-CW-5 work plan to Foley.	Faulk	Foley	8/24/2000				
3	Ecology and EPA to provide joint approval of the 200 Area Implementation Plan	Faulk/Z. Jackson	Foley	8/24/2000				
4	Day to provide email to Z. Jackson on 200-UP-1 turn on date.	G. Day	Z. Jackson	8/24/2000				
5	Day to provide list of maintenance activities scheduled for 200-ZP-1 to Tortoso.	G. Day	A. Tortoso	8/24/2000				
6	Faulk requested presentation at next UMM on PITT well deepening DOW and DQO efforts.	R. Jackson	Faulk	8/24/2000				

Attachment 3

MEETING MINUTES
200 AREA GROUNDWATER AND SOURCE OPERABLE UNITS
UNIT MANAGERS' MEETING -- 200 AREA
August 24, 2000

Agenda: See Attachment #1

Attendees: See Attachment #2

Topics of Discussion from Agenda:

1. General:

   - Outstanding action items – Bryan Foley (U.S. Department of Energy, Richland Operations Office [RL]) presented the new tracking form and action items will be recorded and tracked (see attached).
   - Passive neutron geophysical tool demonstration at borehole 299-W18-159 (216-Z-1A Drain/Tile Field) and borehole 299-W18-179 (216-Z-12 Crib) in mid-September – Bruce Ford reported they originally planned to be in the field in mid-August but moved this activity to September due to contract issues with Three Rivers. This is a hot spot identification tool and the purpose is proof of principle test; therefore, no outside review is planned. Ted Wooley will extend an invitation to other Ecology personnel to watch the demonstration.
   - Update of five-year review – Dennis Faulk (U.S. Environmental Protection Agency [EPA]) reported he is currently working on the 200 Area section. Soil sites will have minimal discussion. There will be major discussion with 200-ZP-1 and 200-ZP-2 due to carbon tetrachloride issues. Another major issue coming is the new EPA policy for institutional controls. Records of Decision (RODs) will have to be revised. The original issue date of September is no longer feasible. Dennis Faulk is planning on releasing the first version for review in September, and the new goal is to have the document finalized by the end of November.

2. 200-CW-1 Gable/B Pond and Ditches Cooling Water OU:

   - Work Plan Status – The work plan was issued. Ted Wooley (Washington State Department of Ecology [Ecology]) reported that he has comments on the work plan. He will meet with Mary Todd (CH2M HILL, Hanford, Inc. [CHI]) and Bryan Foley after the UMM to discuss these comments.
   - Remedial Investigation (RI) Report Status – Ted Wooley reported that he would not initiate review of the RI report until after the work plan was approved by Ecology. However, a new person will start on Monday and be assigned this task. Bryan Foley requested the review start date of the RI report so he could forecast the completion of the review and update the schedule.
   - IDW Status – Bryan Foley reported this investigation-derived waste (IDW) has been on the truck at the Environmental Restoration Disposal Facility (ERDF) for the past several weeks and is becoming urgent problem because the work plan has not yet been approved by Ecology. If the work plan will take some time to approve, other waste disposal options will have to be examined.

3. 200-CS-1 Chemical Sewer OU:

   - Work Plan Status – Revision 0 has been issued. RL received initial comments from Matt Mills (Ecology), newly assigned to this operable unit (OU). Matt will need more time to review the document but requested a meeting be scheduled the first week in September to discuss his comments (see attached action item log).
   - RL reported that the Tri-Party Agreement (TPA) change package has been signed and thanked everyone for their phenomenal efforts.

4. 200-CW-5 U Pond/Z Ditches Cooling Water OU:

   - Work Plan Status – Revision 0 has been issued. Dennis Faulk will provide the approval letter to Bryan Foley (see attached action item log).

5. 200-TW-1 Scavenged and 200-TW-2 Tank Waste OUs:

   - Work Plan Status – This document is currently in regulator review (from 8/20 to 9/20). Since this OU has Ecology and EPA split responsibility, Dennis Faulk thought he and Zelma Jackson should meet to provide comments. Bryan Foley provided the reasons a document goes through a public review. Dennis Faulk recommends NOT sending the document out for public comment, due to the work previously done at the 200-BP-1 OU. Zelma will need to assess the need for public review of this document, based on the criteria provided by Bryan.

6. 200-PW-2 Uranium-Rich Process Waste OU:

   - Work Plan and DQO Schedule – Bryan Foley reported that the work plan is due out by 12/29, according to the TPA milestone. Mary Todd reported that the sections of the work plan are currently being written, but portions will not be completed until DQO items are resolved.
   - DQO Status – Mary Todd reported that the external DQO meeting was held 8/8. No comments have been received yet. Zelma reported that several issues need to be addressed internally (RAD levels, use issues), but hopes to have this complete by next Monday (8/28).

7. 200 Area Remedial Action Project:

   - FY 2001 Work Scope Status – Work scope is still in progress. Additional details on funding will be provided to the regulators once finalized. The TPA change package signing helped IPL.

8. RCRA Groundwater Monitoring Program:

- 216-A-10, 216-A-36B, 216-A-37-1 Cribs RCRA groundwater monitoring briefing (PNNL) – Jon Lindberg (Pacific Northwest National Laboratory [PNNL]) presented the following information to provide background for the 200-PW-2 work plan: TSD closure plan dates/schedules, geology, past history and use of cribs, constituents detected and monitored, near-field and far-field wells, constituent list exceeding drinking water standards, plume maps, and trend plots (see attached handout). Possible future activities will be replacing wells not currently meeting *Washington Administrative Code* (WAC) 173-160 standards and further evaluation of groundwater flows. The presentation was well received and the regulators appreciated the background information in preparation of the 200-PW-2 work plan.

9. 200-UP-1:

- Status Operational Update – Garrett Day (Bechtel Hanford, Inc. [BHI]) reported that the system was turned off Tuesday, 8/22/00, for ERDF transfer of leachate. Zelma requested an email from Garrett Day indicating when the system was turned back on.
- Signing of Waste Management Plan – It was reported that the waste management plan was signed.

10. 200-ZP-1:

- Shutdown of Extraction Well 299-W15-37 – Bill McMahon reported that this extraction well should be shut down and requested the process for doing this. Dennis Faulk indicated that this information needs to be documented in the Unit Managers' Meeting minutes. Dennis Faulk okayed the shutdown of this well. He also mentioned that the remedial design report (RDR) would need revision to reflect this shutdown.
- Status Operational Update – Garrett Day reported the system is running fine. Garrett will be scheduling routine maintenance activities and wanted to advise attendees of this. Arlene Tortoso (RL) requested a list from Garrett Day of the activities involved.
- Status of Regulator Review – Dennis Faulk (EPA) would like a re-look at the entire 200-ZP-1 OU network.
- ITRD PITT Demonstration – Arlene reported there is currently $1.1 million in the budget for this program. Questions have been provided to the Expert Panel to resolve and provide guidance. There may be a possibility of Lead Lab review. Dennis Faulk requested a presentation at the next UMM on the PITT well deepening description of work and data quality objective (DQO) efforts.

11. 200-ZP-2:

- Status Monitoring Data Evaluations – Tim Lee reported that monitoring continues. The August passive data is currently being evaluated.

- New Data – Tim Lee provided the compilation of July data to Dennis Faulk (see attached).

Other Items:

1. Arlene Tortoso indicated that Joan Woolard (BHI) would be requesting a meeting be set up with Dennis Faulk (EPA) to provide waste issues briefing. Joan will request EPA's approval/okay for the Central Waste Complex.
2. Dennis Faulk reported the multi-media issue is very close to being resolved/settled.
3. Ted Wooley (Ecology) reported that the new Ecology Clean-up Project Manager would start Monday.
4. Ted Wooley's last day is September 6, 2000. A new Ecology person will be responsible for the 200-CW-1 OU. It is unknown at this time who that person will be.
5. Ecology and EPA will provide a joint approval on the 200 Area Implementation Plan.

2.0 Location and Facility Descriptions

The Hanford Site is located in south-central Washington State approximately 170 miles (272 km) east of Seattle and 130 miles (208 km) southwest of Spokane (Figure 2.1). The Hanford Site was initially established in 1943 by the U.S. Army Corps of Engineers as the location for plutonium production reactors and associated plutonium extraction facilities. Two of the PUREX cribs (A-10 and A-36B) are located in the southeast corner of the 200 East Area (Figure 2.1). The third crib (A-37-1) is located about 420 m east-northeast near the Grout Facility (Figures 2.1 and 2.2).

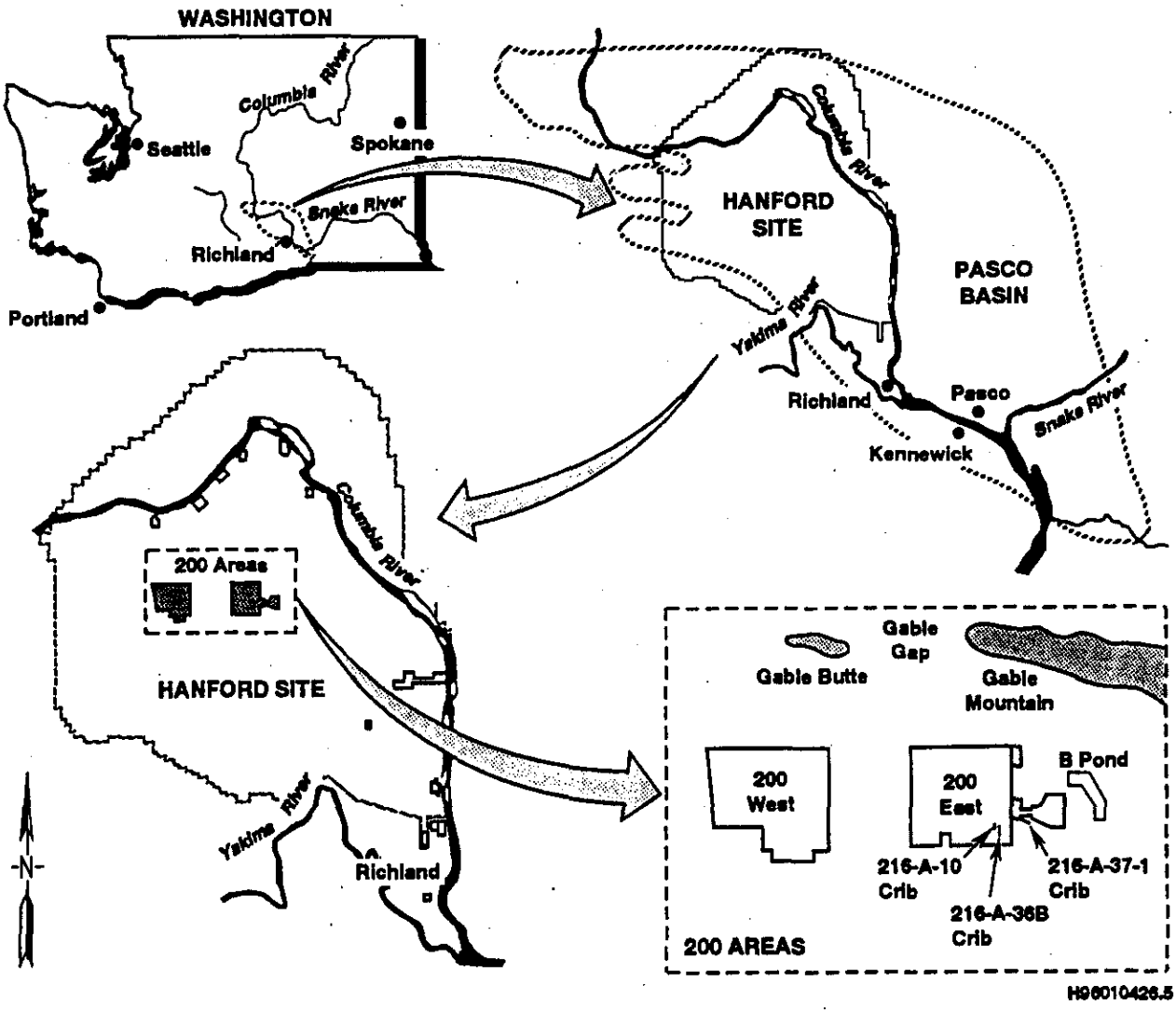


Figure 2.1. Location of the Hanford Site

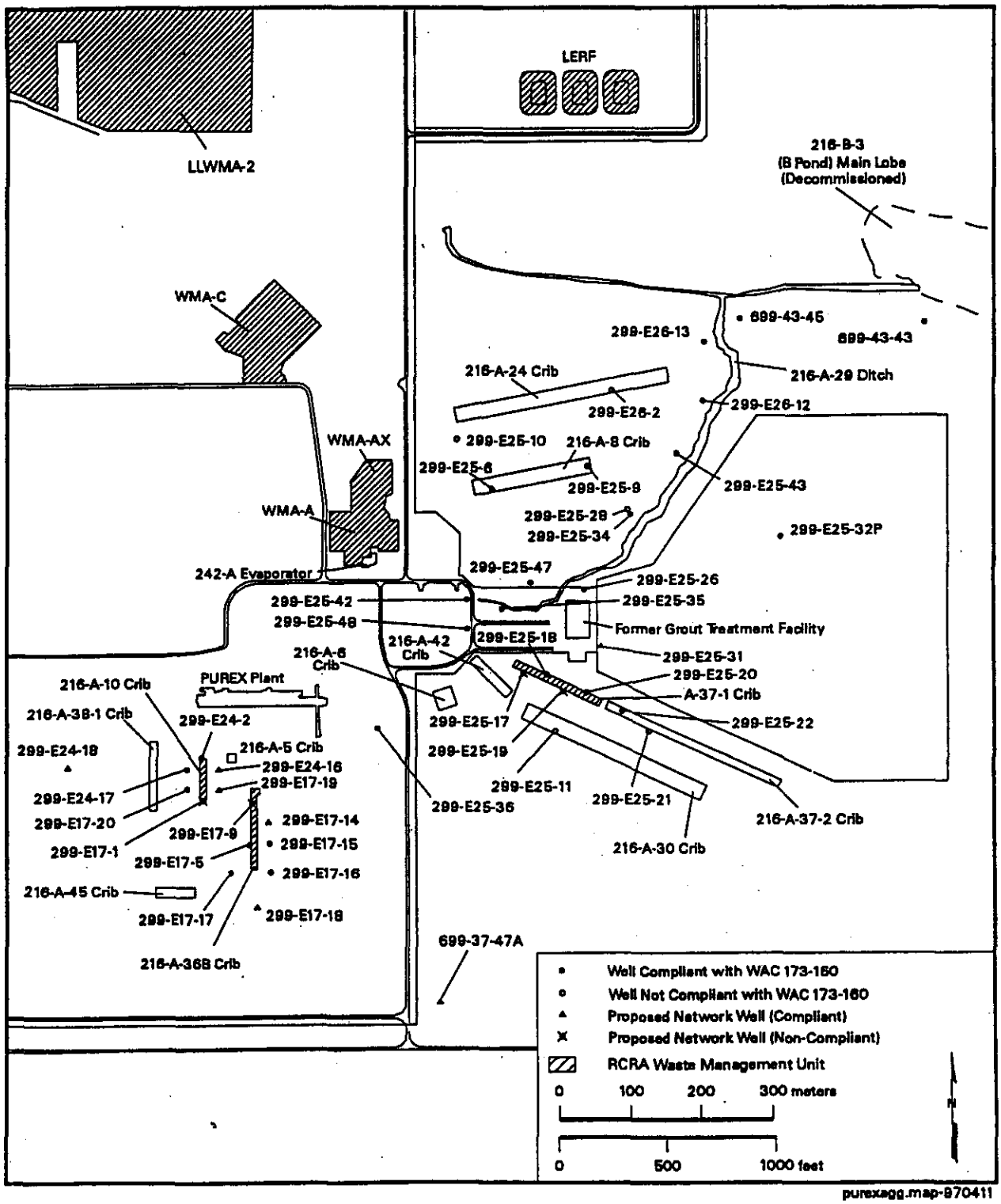


Figure 2.2. Location of the 216-A-10, 216-A-36B, and 216-A-37-1 Cribs and Other Facilities

PUREX Cribs 216-A-10
216-A-36B
216-A-37-1

RCRA TSDs
Interim Status
Groundwater Quality Assessment Program

Goal: In the interim, track the nature, extent, and concentration of the groundwater contaminant plumes emanating from the PUREX Cribs

UPDATED:22-Jul-99

PROPOSED PERMIT MODIFICATION SCHEDULE
Attachment 27

YEAR & MODIFICATION FOR TSD UNIT	TYPE OF PERMIT	TPA MILESTONE	OPERABLE UNIT	STATUS & REMARKS
MODIFICATION K (2005)				
Waste Encapsulation and Storage Facility (WESF)	PART B			
207-A South Retention Basin	CLOSURE PLAN	M-20-53 submit closure plan to Ecology 31DEC03	200-PW-4	Based on estimated completion of ROD in 31DEC04
216-A-10 Crib	CLOSURE PLAN	M-20-33 submit closure plan to Ecology 31OCT03	200-PW-2	Based on estimated completion of ROD in 31MAR05
216-A-36B Crib	CLOSURE PLAN	M-20-33 submit closure plan to Ecology 31OCT03	200-PW-2	Based on estimated completion of ROD in 31MAR05
216-A-37-1 Crib	CLOSURE PLAN	M-20-52 submit closure plan to Ecology 31DEC03	200-PW-4	Based on estimated completion of ROD in 31DEC04

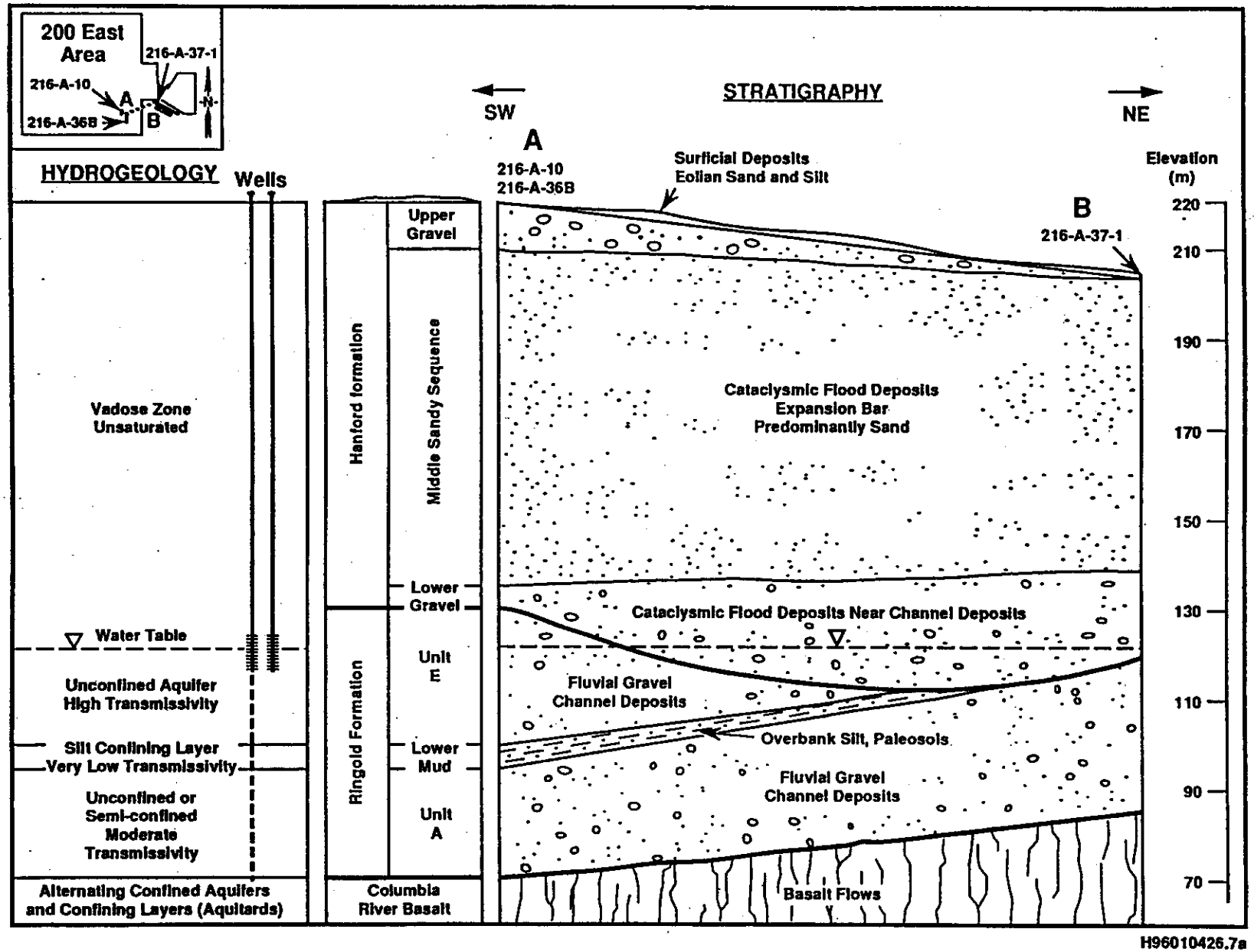


Figure 3.1. Hydrogeology and Stratigraphy Beneath the 216-A-37-1 Cribs and Other Facilities

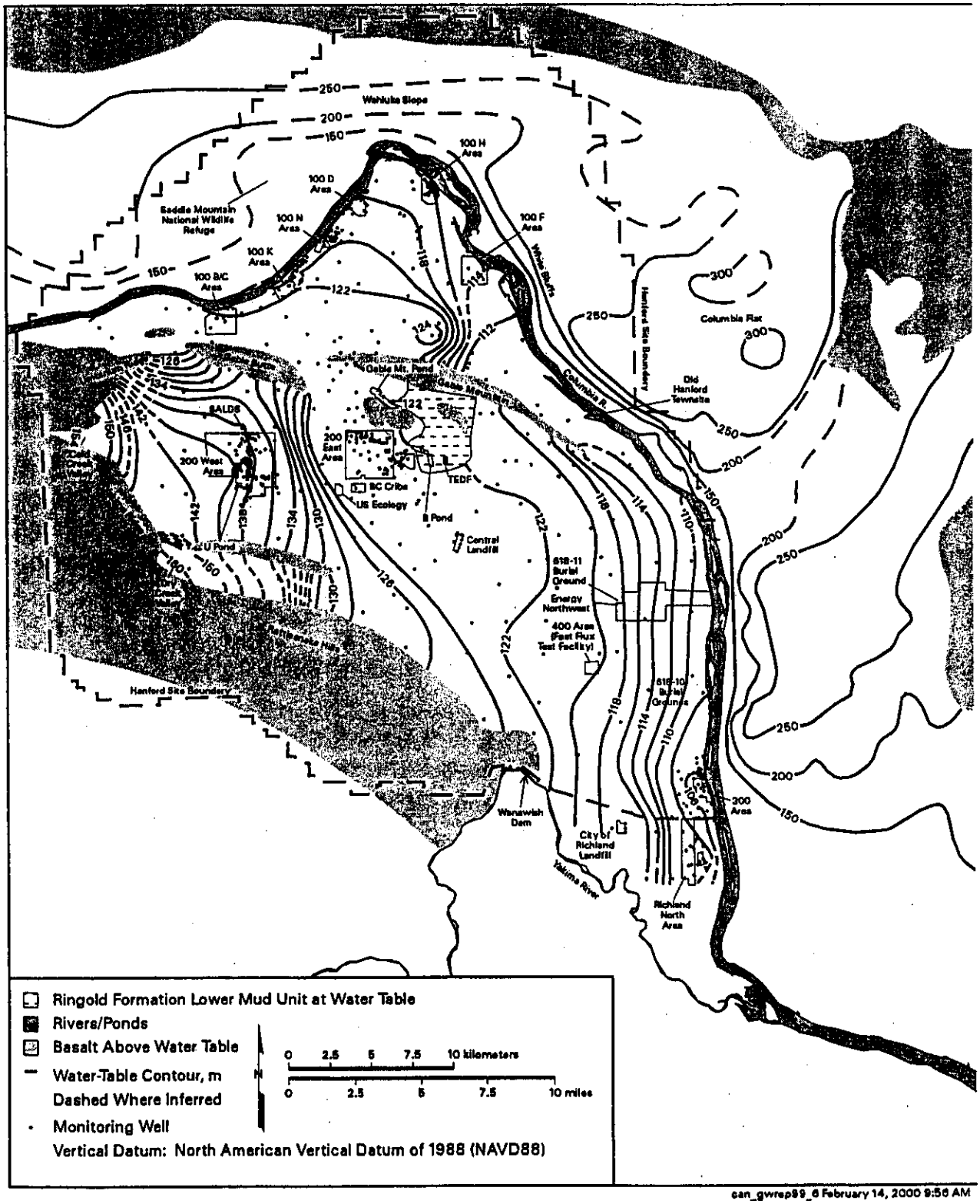


Figure 2.1-1. Hanford Site and Outlying Areas Water-Table Map, March 1999

216-A-36B - 216-A-36 Crib was originally put into operation in 1965, and in early 1966 the crib was separated into A and B sections. In March '66 discharges resumed in B crib only. From '72 – '82 the crib wasn't used. Put back into service in '82 and operated until 1987.

216-A-10 - Crib was first used in 1956 at the first PUREX startup. Used continuously until 1973. Used periodically in 1977, 1978, and 1981. Used continuously again from 1982 to 1987. Was replaced by 216-A-45 Crib in 1987.

216-A-37-1 - Operated March 1977 to April 1989.

Table 4.2. 216-A-10 Crib Contaminant Screening Summary

Process Knowledge	Waste consisted of process distillate discharge that was characteristically acidic and contained concentrated salts. Other wastes included aliphatic hydrocarbon compounds, organic complexants, and radionuclides including ^{3}H, Pu, U, ^{90}Sr, $^{134,137}Cs$, $^{103,106}Ru$, ^{60}Co, ^{113}Sn, ^{147}Pm, ^{241}Am, and ^{129}I.		
Constituents Detected 1988-1994[a] in Groundwater	1,1,1-Trichloroethane 2-Butanone 4,4'-DDT Acetone Al Ammonia Sb ^{125}Sb As Ba Be ^{7}Be Bis(2-ethylhexyl) phthalate B Bromide Cd Ca Carbon disulfide $^{144}Ce/Pr$ ^{134}Cs ^{137}Cs Chloride Cr	Co ^{60}Co Coliform Bacteria Cu ^{154}Eu ^{155}Eu Fluoride Gross Alpha Gross Beta Hydrazine ^{129}I Fe Pb ^{212}Pb Li Mg Mn Hg Methylene chloride Ni Nitrate Nitrite Pu	K ^{40}K Ra ^{106}Ru Se Si Ag Na Sr (elemental) ^{90}Sr Styrene Sulfate ^{99}Tc Sn Toluene ^{3}H U $^{234,235,238}U$ V Zn ^{65}Zn $^{95}Zr/Nb$
Constituents Detected Since 1994[a] in Groundwater	Al Sb ^{125}Sb As Ba Bis(2-ethylhexyl)phthalate Be B Bromide Cd Ca Carbon disulfide Chloride Cr Co ^{60}Co	Cu Fluoride Gross Alpha Gross Beta Hydrazine ^{129}I Fe Pb Mg Mn Hg Methylene chloride Ni Nitrate K Ra	^{106}Ru Se Si Ag Na Sr (elemental) ^{90}Sr Sulfate ^{99}Tc Sn ^{3}H U $^{234,235,238}U$ V Zn

Table 4.2. (contd)

Constituents Exceeding Primary and Secondary MCL and DWS Since 1994-1996[a] in Groundwater	Cr (100 ppb)[b] Gross Alpha (15 pCi/L) ^{129}I (1 pCi/L)	Mn (50 ppb)[b] Ni (100 ppb)[b] Nitrate (45,000 ppb)	^{106}Ru (30 pCi/L) ^{3}H (20,000 pCi/L)

MCL - Maximum Contaminant Level
DWS - Drinking Water Standards
(a) Listed constituents are from wells 299-E17-1, 299-E17-19, 299-E17-20, 299-E24-17, 299-E24-18, 299-E24-2, and/or 299-E24-36.MCL.
(b) The unfiltered metal was above the MCL.

Table 4.3. 216-A-36B Crib Contaminant Screening Summary

Process Knowledge	Waste consisted of process condensate from nuclear fuel decladding operations in which zirconium cladding was removed from irradiated fuel by boiling in a solution of ammonium fluoride and ammonium nitrate. Other waste stream constituents included radionuclides of Pu, ^{3}H, U, ^{90}Sr, ^{137}Cs, $^{103,106}Ru$, ^{60}Co, ^{113}Sn, ^{147}Pm, ^{241}Am, and ^{129}I.		
Constituents Detected 1988-1994[a] in Groundwater	2,4-Dichlorophenol	^{137}Cs	Nitrite
	2,4-Dimethylphenol	Chloride	Phenol
	2-Propanol	Cr	K
	4,4-DDE	Co	^{40}K
	4,4'-DDT	^{60}Co	Ra
	Acetone	Coliform Bacteria Copper	^{106}Ru
	Al	Cresols (methylphenols)	Se
	^{241}Am	Di-n-butylphthalate	Si
	Ammonia	^{154}Eu	Ag
	Sb	^{155}Eu	Na
	^{125}Sb	Fluoride	Sr (elemental)
	As	Gross Alpha	^{90}Sr
	Ba	Gross Beta	Sulfate
	Be	^{129}I	^{99}Tc
	^{7}Be	Fe	Sn
	Bis(2-ethylhexyl) phthalate	Pb	Toluene
	B	^{212}Pb	Trichloromonofluoromethane
	Bromide	Mg	^{3}H
	Cd	Mn	U
	Ca	Hg	$^{234,235,238}U$
	^{14}C	Methyl ethyl ketone	V
	$^{144}Ce/Pr$	Methylene chloride	Zn
	^{134}Cs	Ni	^{65}Zn
		Nitrate	$^{95}Zr/Nb$

Table 4.3. (contd)

Constituents Detected Since 1994[a] in Groundwater	Al	Cu	Si
	Sb	Di-n-butylphthalate Fluoride	Ag
	As	Gross Alpha	Na
	Ba	Gross Beta	Sr (elemental)
	Be	^{129}I	^{90}Sr
	B	Fe	Sulfate
	Bromide	Pb	^{99}Tc
	Cd	Mg	Sn
	Ca	Mn	^{3}H
	^{14}C	Ni	U
	^{137}Cs	Nitrate	$^{234,235,238}U$
	Chloride	K	V
	Cr	Se	Zn
	Co		
	^{60}Co		
Constituents Exceeding Primary and Secondary MCL and DWS Since 1994-1996[a] in Groundwater	Sb (6 ppb)	^{129}I (1 pCi/L)	Nitrate (45,000 ppb)
	Cr (100 ppb)[b]	Fe (300 ppb)[b]	^{90}Sr (8 pCi/L)
	Gross Alpha (15 pCi/L)	Ni (100 ppb)[b]	^{3}H (20,000 pCi/L)

MCL - Maximum Contaminant Level
DWS - Drinking Water Standards

(a) Listed constituents are from wells 299-E17-5, 299-E17-9, 299-E17-14, 299-E17-15, 299-E17-16, 299-E17-17, 299-E17-18, 299-E24-18, and/or 299-E24-36.

(b) The unfiltered metal was above the MCL.

Table 4.4. 216-A-37-1 Crib Contaminant Screening Summary

Process Knowledge	Waste consisted of process condensate made up of a low-salt alkaline solution. Major contaminants included ammonia, acetone, hexone, methylene chloride, trichloroethane, tritium, uranium strontium-90, cesium-137, and promethium-147.		
Constituents Detected 1988-1994[a] in Groundwater	1,1,1-Trichloroethane	Cu	Pentachlorophenol
	4,4'-DDD	Delta-BHC	K
	4,4'-DDT	Dieldrin	^{40}K
	Aldrin	Dimethoate	Ra
	Al	Endrin	^{106}Ru
	Ammonia	Endrin Aldehyde	Se
	Sb	^{154}Eu	Si
	^{125}Sb	^{155}Eu	Ag
	As	Fluoride	Na
	Ba	Gross Alpha	Sr (elemental)
	Be	Gross Beta	Sulfate
	^{7}Be	Heptachlor	^{99}Tc
	Bis(2-ethylhexyl) phthalate	Heptachlor epoxide	Sn
	B	Hydrazine	Ti
	Cd	^{129}I	Toluene
	Ca	Fe	Tris-2-chloroethyl phosphate
	$^{144}Ce/Pr$	Pb	^{3}H
	^{134}Cs	Lindane	U
	^{137}Cs	Li	$^{234,238}U$
	Chloride	Mg	V
	Chloroform	Mn	Zn
	Cr	Hg	^{65}Zn
	Co	Methylene chloride	$^{95}Zr/Nb$
	^{60}Co	Ni	m-Cresol
	Coliform Bacteria	Nitrate	
Constituents Detected Since 1994[a] in Groundwater	Al	Gross Alpha	Ag
	Sb	Gross Beta	Na
	As	Hydrazine	Sr (elemental)
	Ba	^{129}I	Sulfate
	Be	Fe	^{99}Tc
	B	Pb	Sn
	Cd	Mg	^{3}H
	Ca	Mn	U
	Chloride	Ni	$^{234,235,238}U$
	Cr	Nitrate	V
	Co	K	Zn
	Cu	Si	
	Fluoride		

Table 4.4. (contd)

Constituents Exceeding Primary and Secondary DWS or MCL Since 1994-1996[a] in Groundwater	Al (200 ppb)[b]	^{129}I (1 pCi/L)	Nitrate (45,000 ppb)
	Sb (6 ppb)	Fe (300 ppb)[b]	^{3}H (20,000 ppb)
	Cd (5 ppb)[b]	Mn (50 ppb)[b]	Zn (5000 ppb)[b]
	Cr (100 ppb)[b]	Ni (100 ppb)[b]	

MCL - Maximum Contaminant Level
DWS - Drinking Water Standards
(a) Listed constituents are from wells 299-E25-11, 299-E25-18, 299-E25-19, 299-E25-20, 299-E25-31, and/or 299-E25-44.
(b) The unfiltered metal was above the MCL.

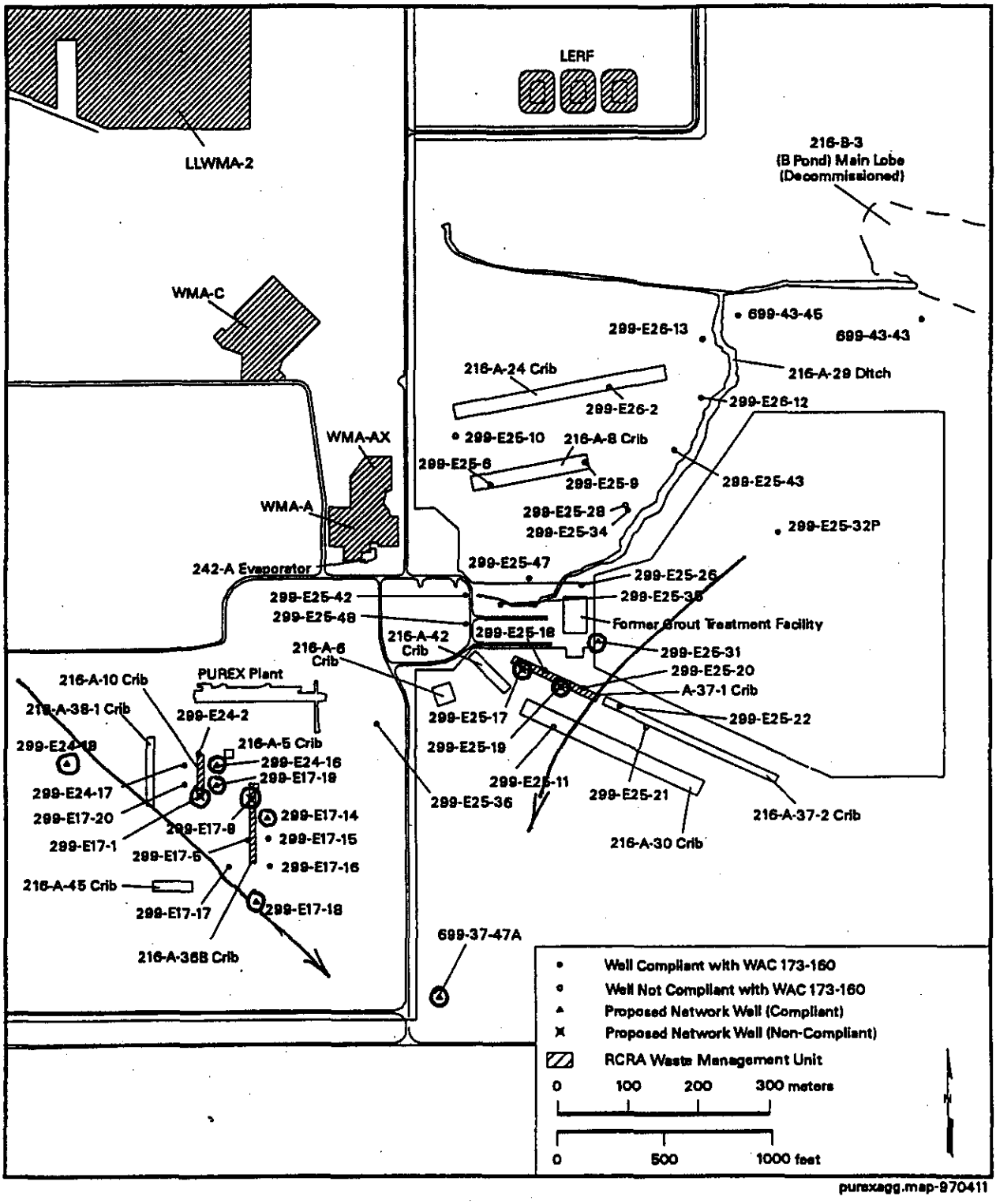


Figure 2.2. Location of the 216-A-10, 216-A-36B, and 216-A-37-1 Cribs and Other Facilities

Table 5.1. Proposed Groundwater Monitoring Network

Far-Field Wells (Within 2,000 pCi/L Tritium Plume)			
Sampled Once Every Three Years (As a Minimum)			
699-47-5	699-46-21B	699-46-4	699-43-3
699-42-12A	699-41-1	699-41-23	699-40-1
699-38-15	699-35-9	699-33-42	699-32-43
699-32-22A	699-31-11	699-31-31	699-29-4
699-28-40	699-27-8	699-26-15A	699-25-33A
699-24-34B	699-22-35	699-21-6	699-20-E12
699-20-20	699-20-E5	699-17-5	699-10-E12
699-9-E2	699-8-17	699-8-25	699-2-3
699-2-7	699-1-18A	699-S3-E12	699-S6-E4A
699-S6-E14	699-S19-E13	699-S19-E14	699-S0-7
499-S0-8	399-1-18A		
Far-Field Wells (Immediately Outside 2,000 pCi/L Tritium Plume)			
Sampled Once Every Three Years (As a Minimum)			
699-48-7A	399-6-1	699-40-33A	699-24-46
699-19-43	699-14-38	699-S3-25	699-S8-19
699-S12-3	699-S31-1	699-S27-E14	699-S29-E16A
Near-Field Wells			
Sampled Semi-Annually (except for one well at each crib[a])			
Upgradient			
299-E24-18[a] (A-10 Crib) 299-E25-31[a] (A-37-1 Crib)			
Downgradient			
A-10 Crib	A-36B Crib	A-37-1 Crib	
299-E17-1	299-E17-14[a,b]	299-E25-19[b]	
299-E24-16[a,b]	299-E17-17[a]	299-E25-17	
299-E17-19[a]	299-E17-9	299-37-47A[a]	
(a) Well meets standards of WAC 173-160 (b) Well sampled quarterly			

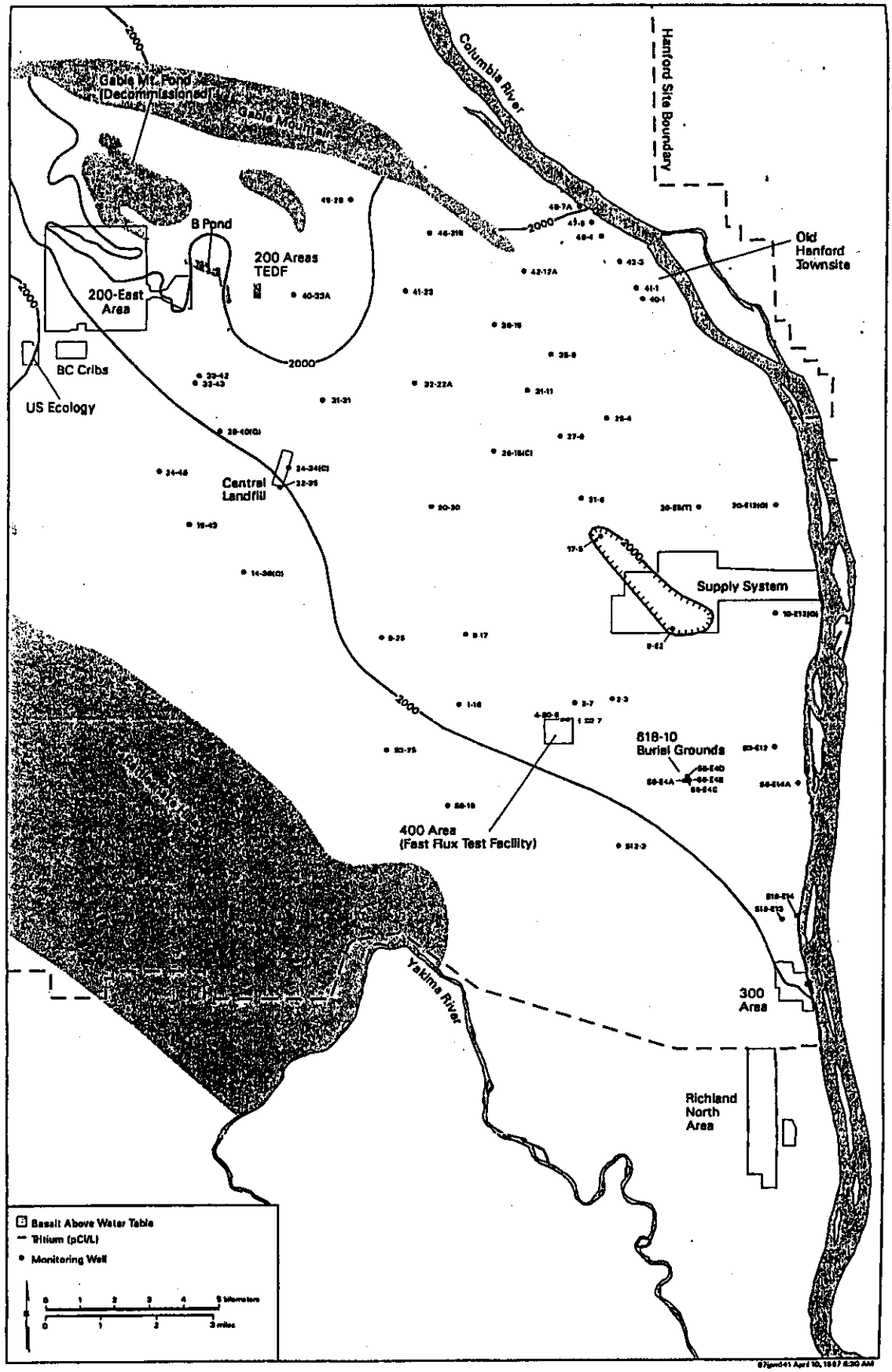


Figure 5.1. Location of Far-Field Wells Proposed for Monitoring Network

Table 5.2. Combination Network Constituent List

Far-Field Wells	Near-Field Wells
Field-Analyzed parameters: pH specific conductance temperature turbidity	**Field-Analyzed parameters:** pH specific conductance temperature turbidity
	turbidity
	phenols
	ICP metals
anions (Nitrate)	anions
	gross alpha gross beta
Site-Specific Parameters: ^{3}H ^{129}I	**Site-Specific Parameters:** alkalinity ammonium ion As ^{129}I ^{3}H ^{90}Sr

More Recently: FY-1999 Annual Report

Constituents Exceeding DWS In At Least One Well Of the Near-Field Network Wells

Iodine –129 (all up- and down-gradient network wells)

Nitrate - (all network wells near 216-A-10 and 216-A-36B cribs)

Manganese - (was above DWS at 216-A-37-1 crib, but below now)

Tritium - (all downgradient wells except 299-E25-17 at A-37-1)

Strontium-90 and Gross Beta - (in well 299-E17-14 only, A-36B)

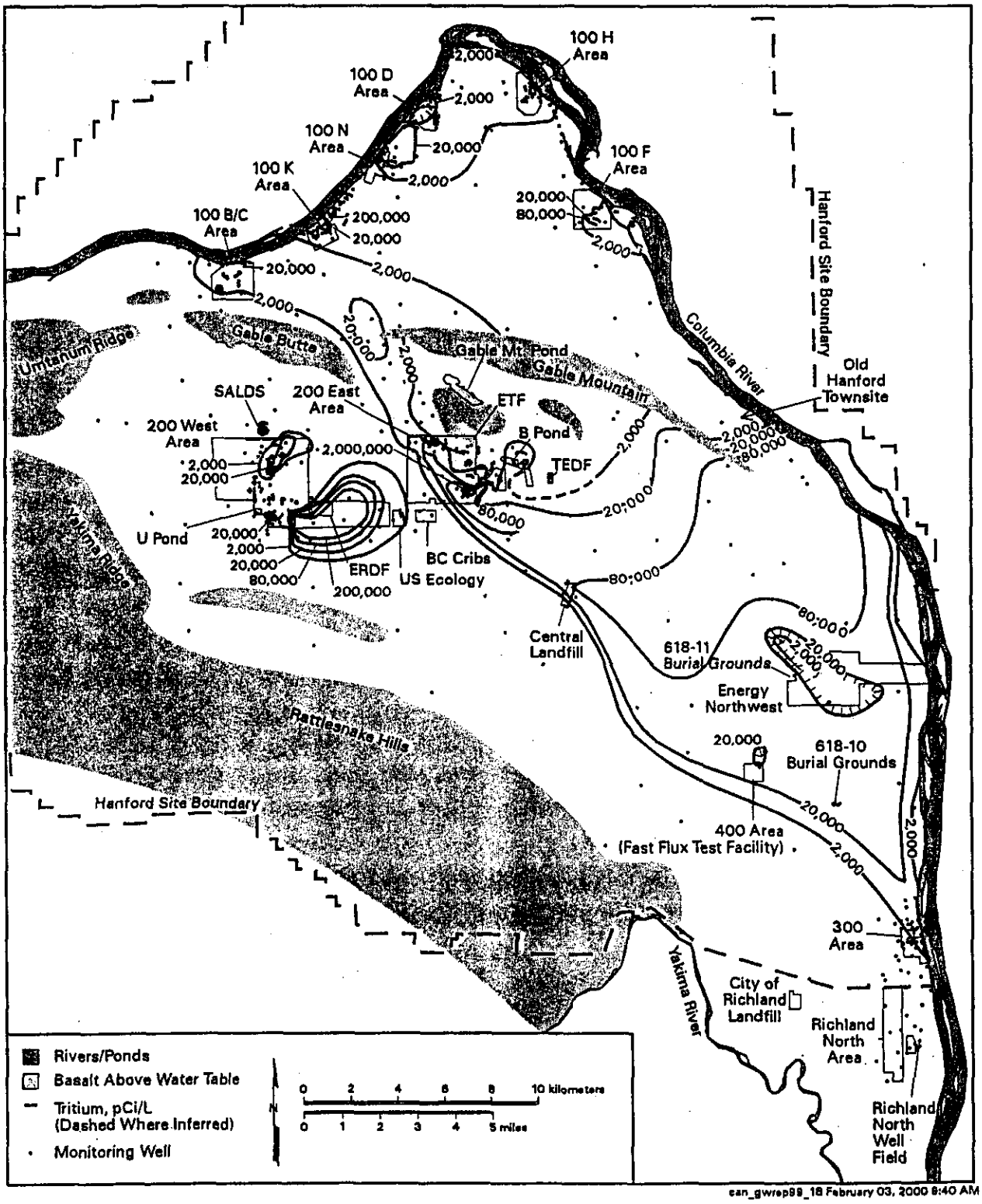


Figure 2.1-3. Average Tritium Concentrations on the Hanford Site, Top of Unconfined Aquifer

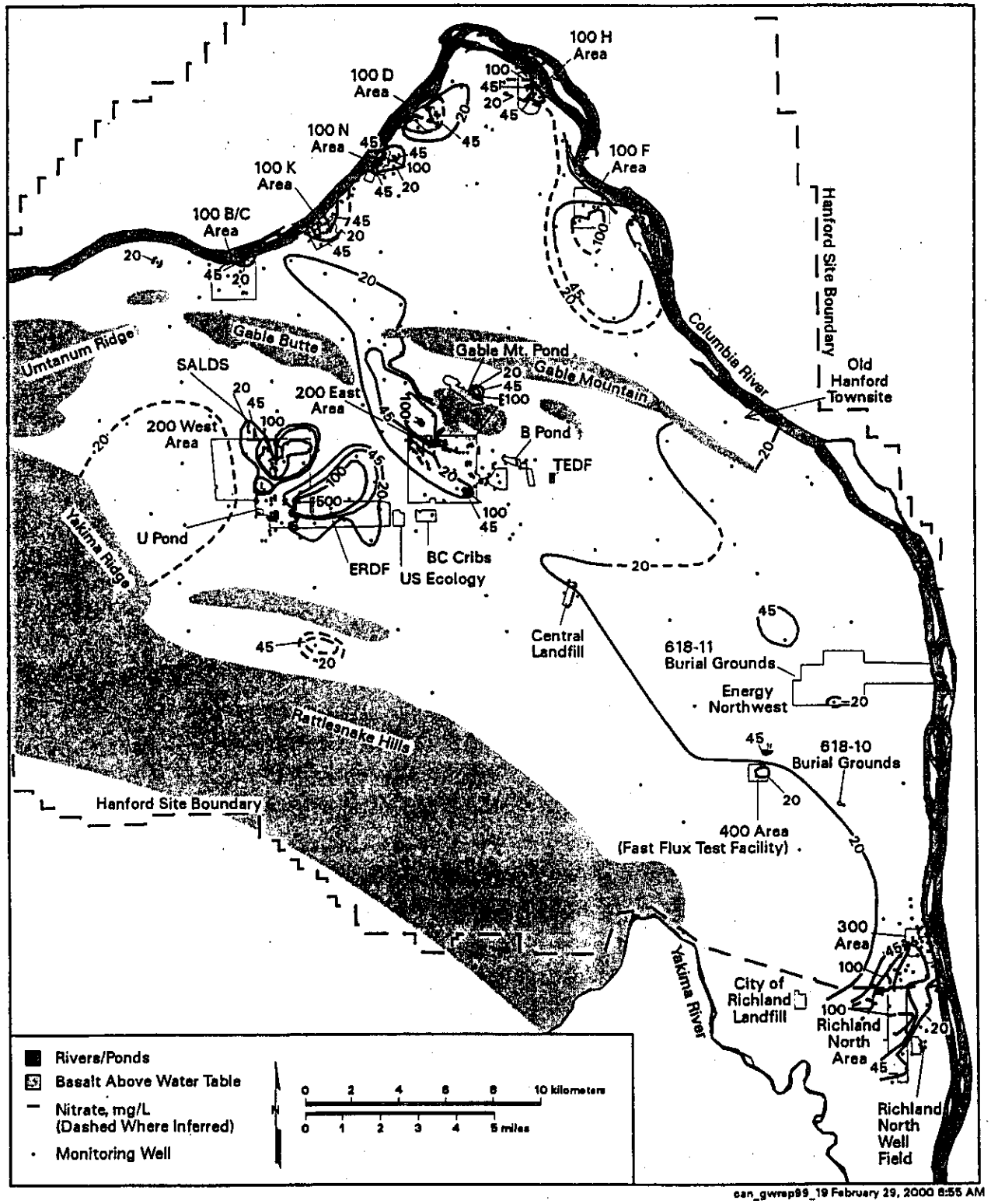


Figure 2.1-4. Average Nitrate Concentrations on the Hanford Site, Top of Unconfined Aquifer

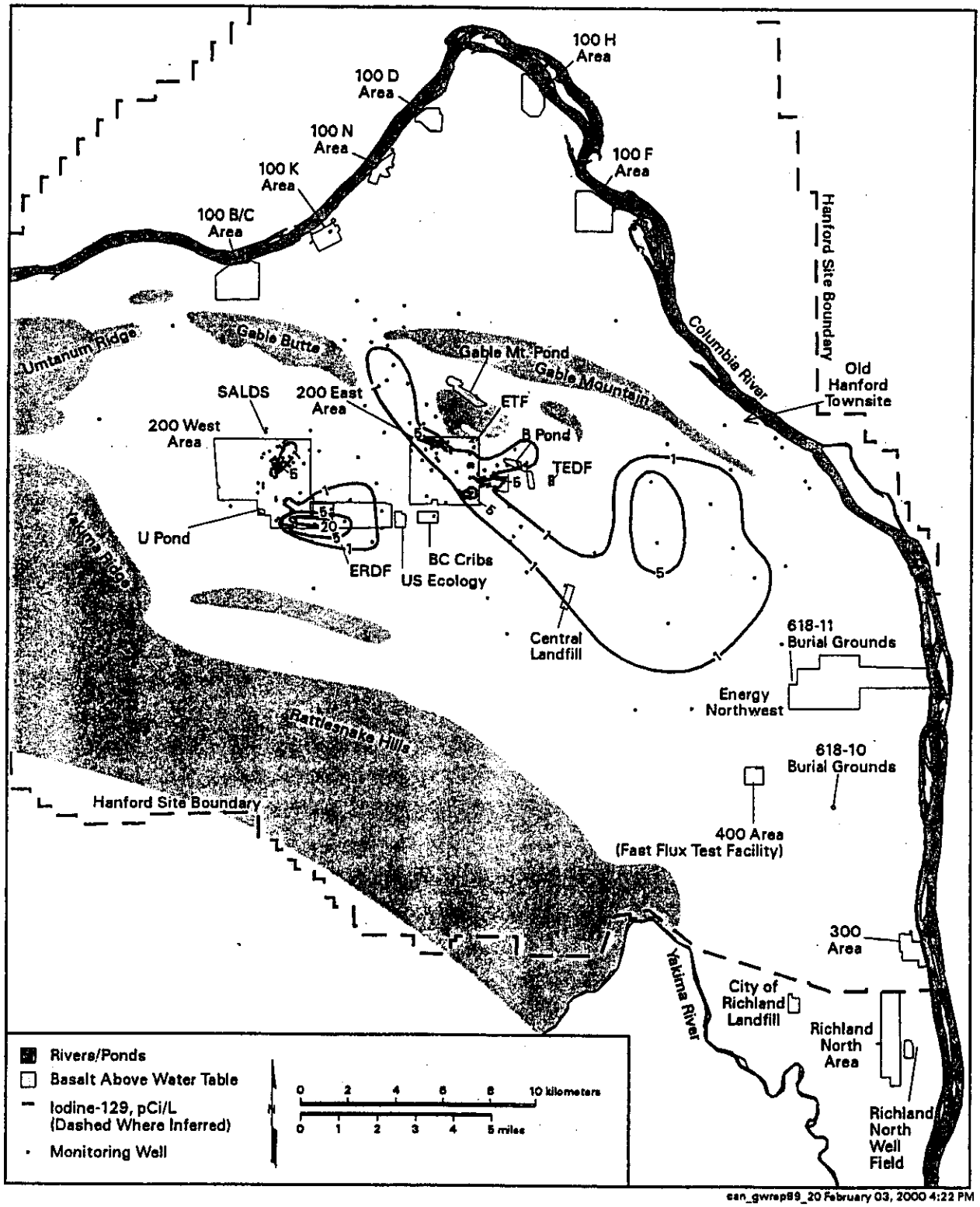


Figure 2.1-5. Average Iodine-129 Concentrations on the Hanford Site, Top of Unconfined Aquifer

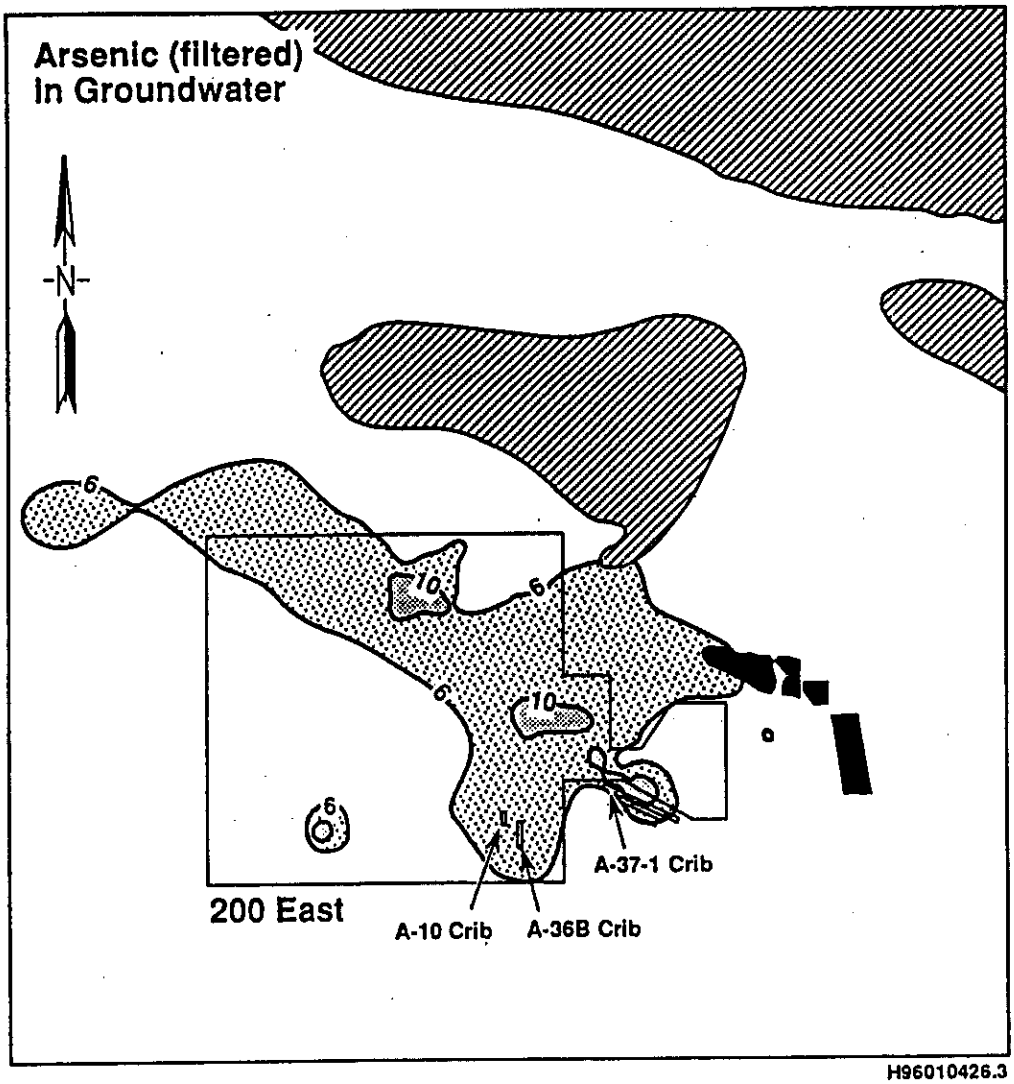


Figure 4.2. Arsenic in the Uppermost Aquifer, 200 East Area

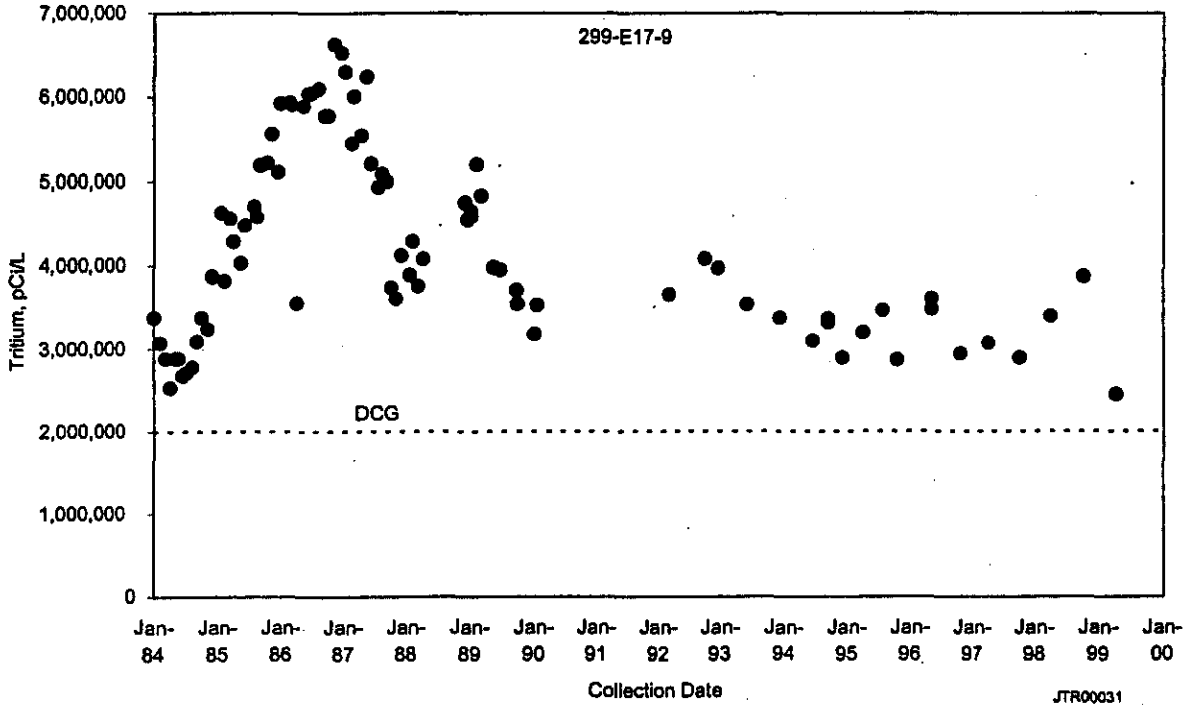


Figure 2.9-13. Tritium in Well 299-E17-9 at 216-A-36B Crib

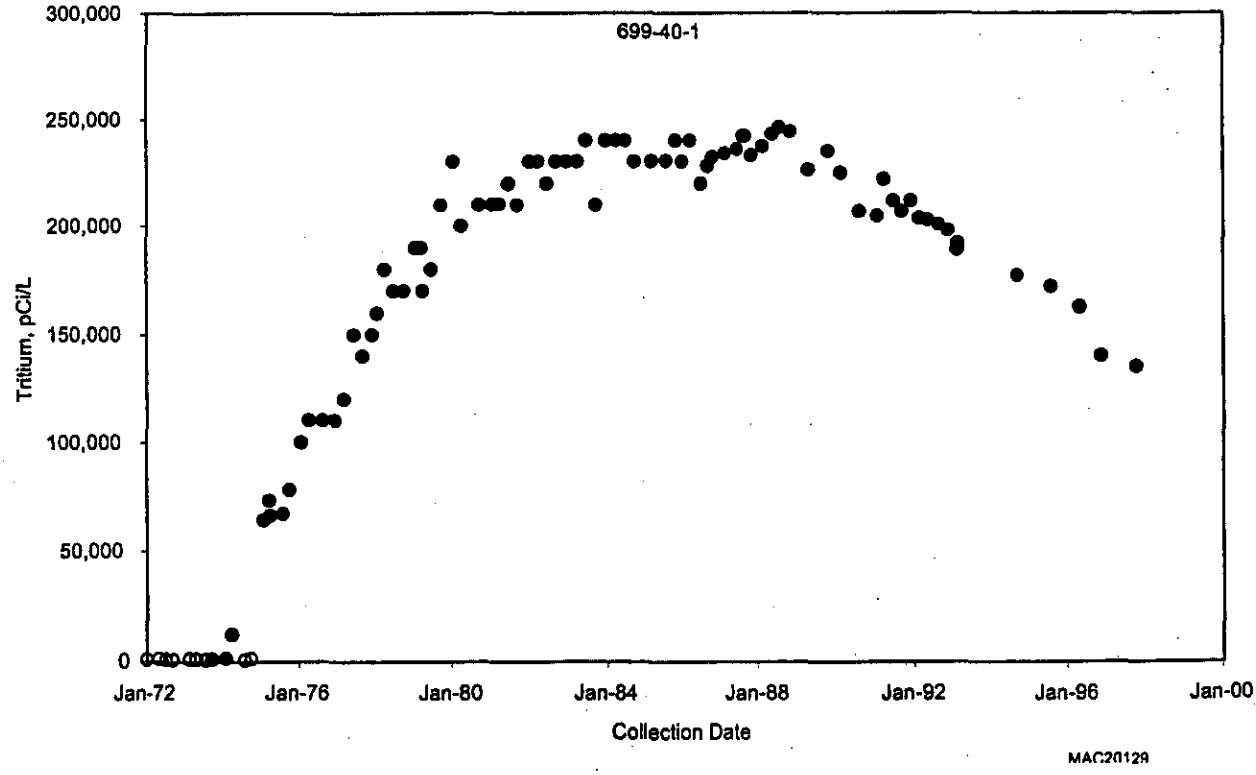


Figure 2.9-14. Tritium in Well 699-40-1 at the 600 Area Near the Old Hanford Townsite

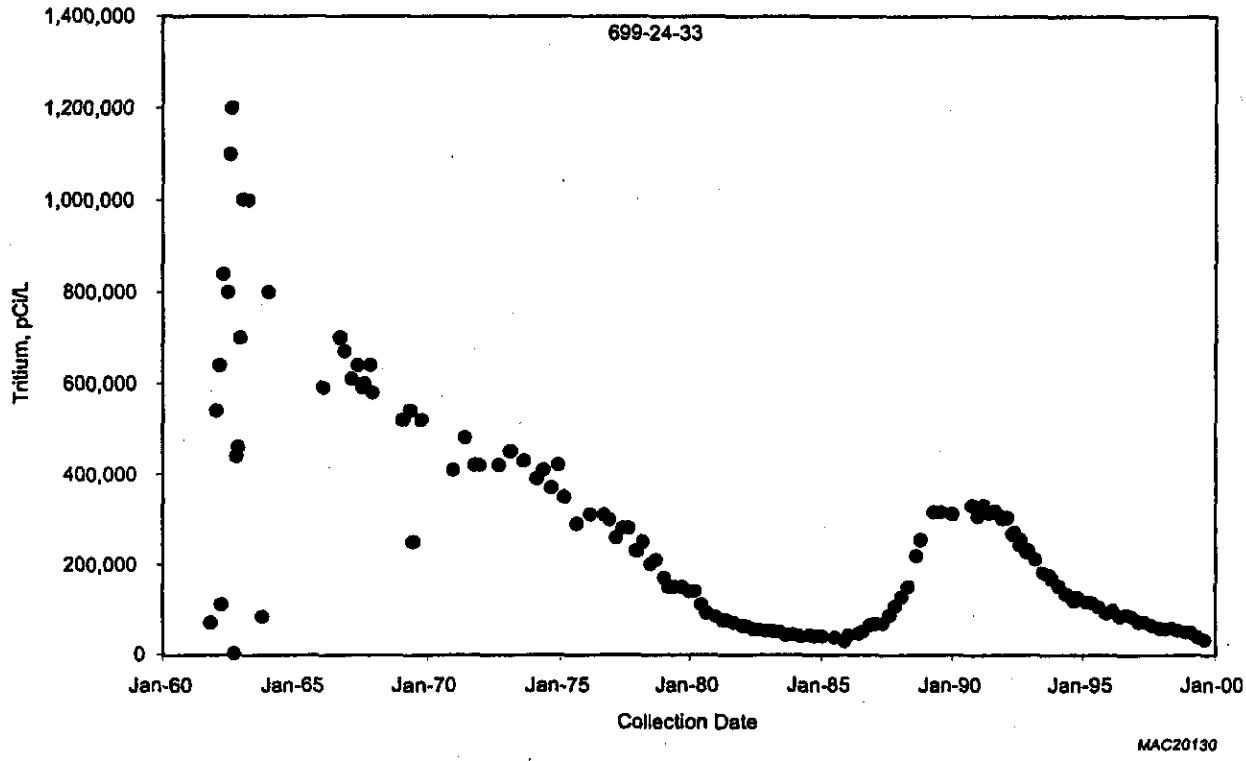


Figure 2.9-15. Tritium in Well 699-24-33 Near the Central Landfill

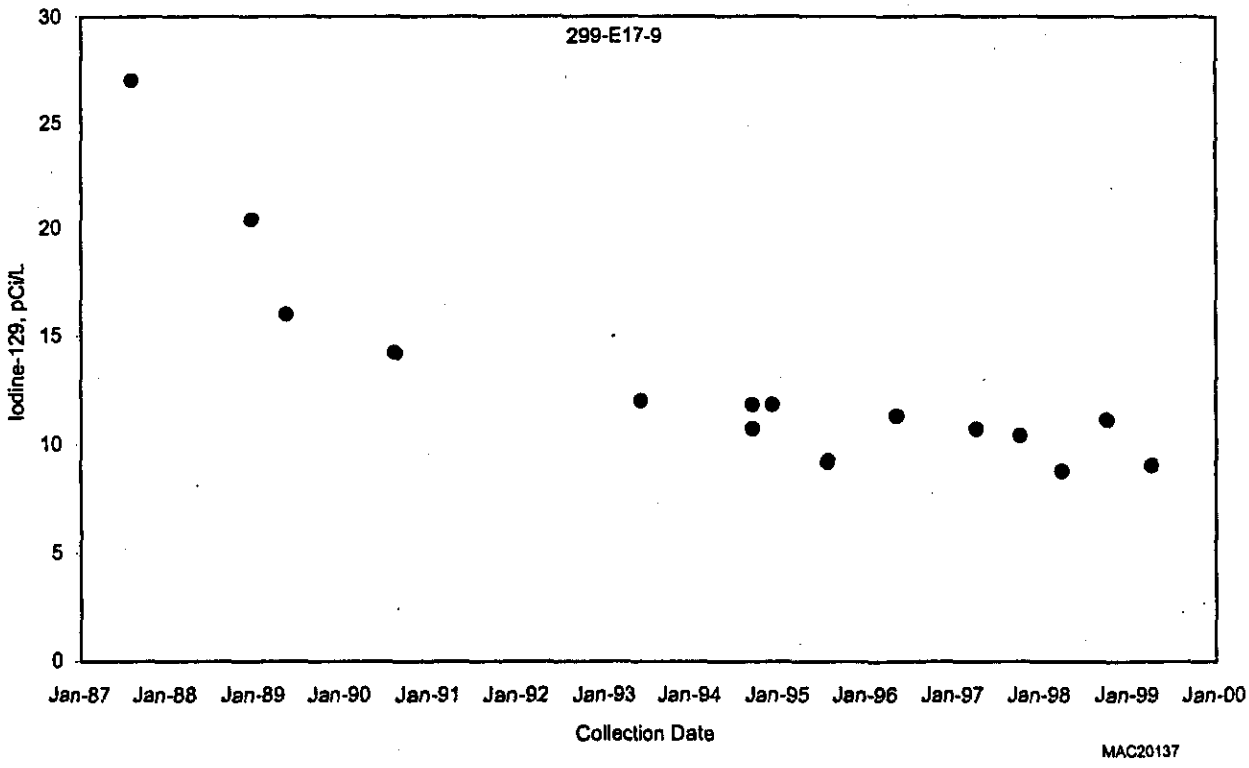
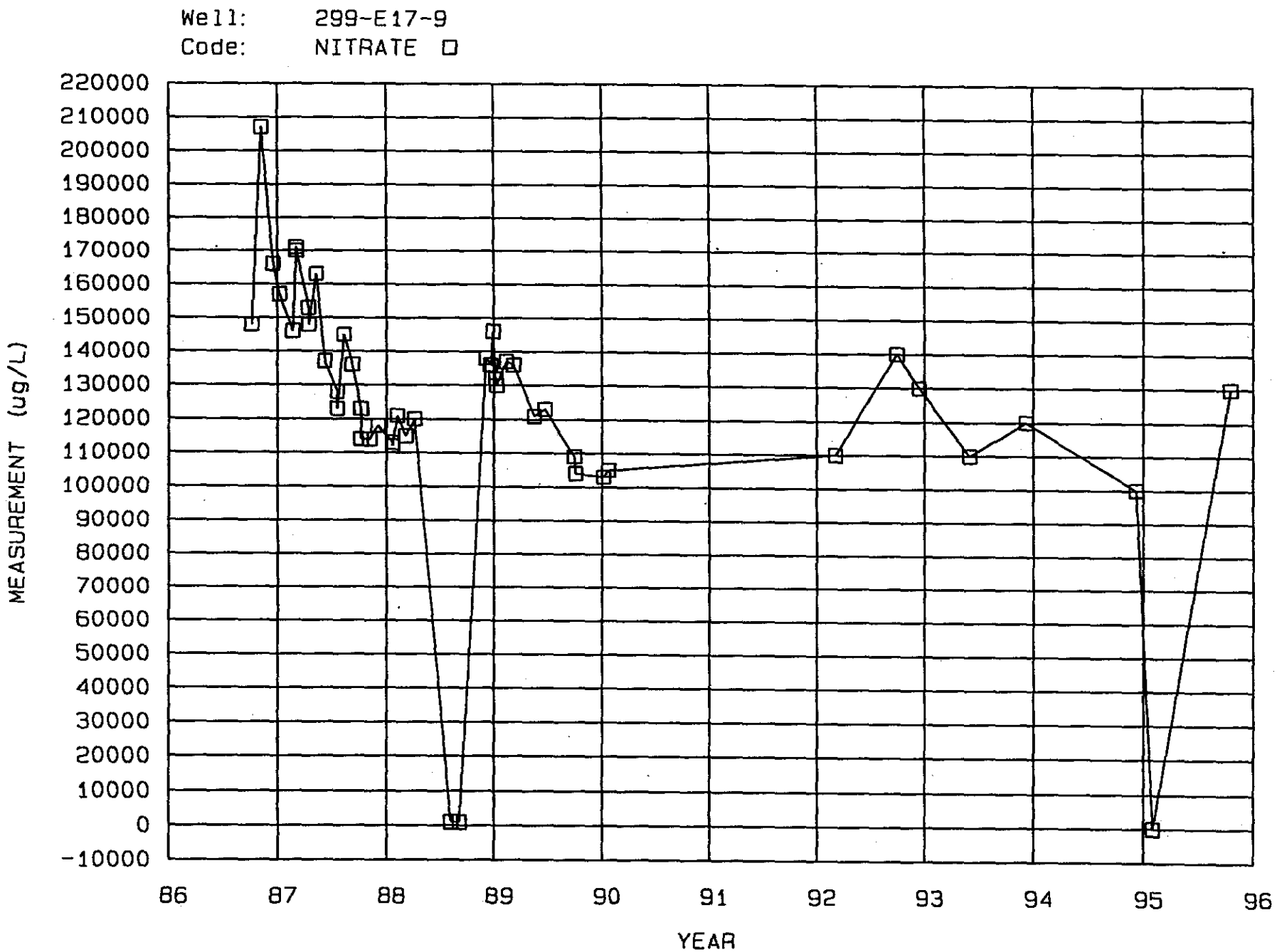


Figure 2.9-16. Iodine-129 in Well 299-E17-9 at 216-A-36B Crib

Nitrate


Well: 299-E17-9
Code: NITRATE
MEASUREMENT (ug/L)
220000
210000
200000
190000
180000
170000
160000
150000
140000
130000
120000
110000
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
-10000
86
87
88
89
90
91
92
93
94
95
96
YEAR

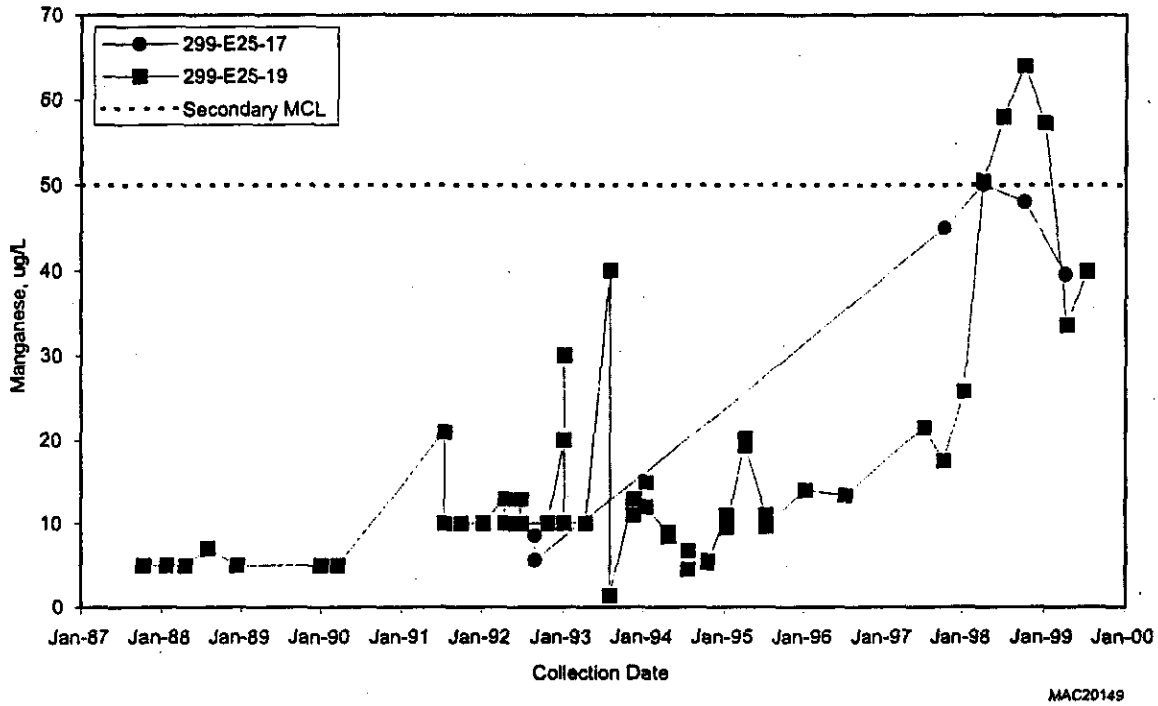


Figure 2.9-17. Manganese at 216-A-37-1 Crib

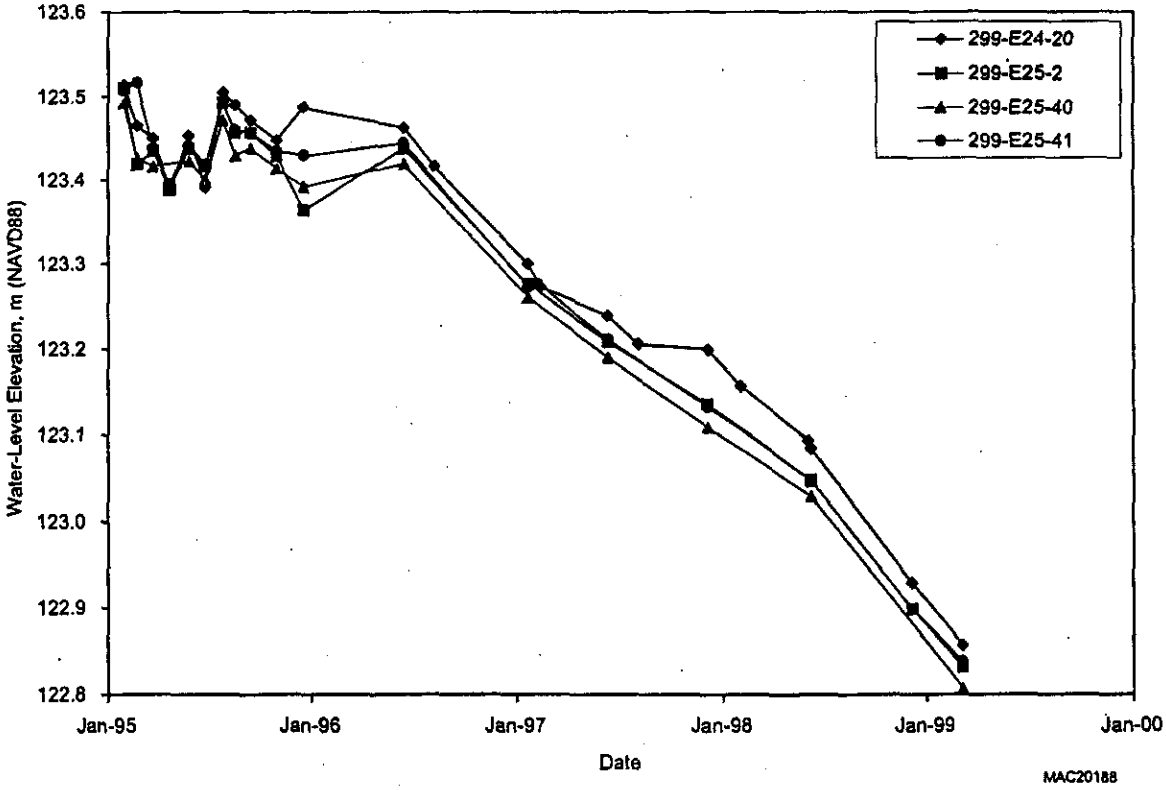
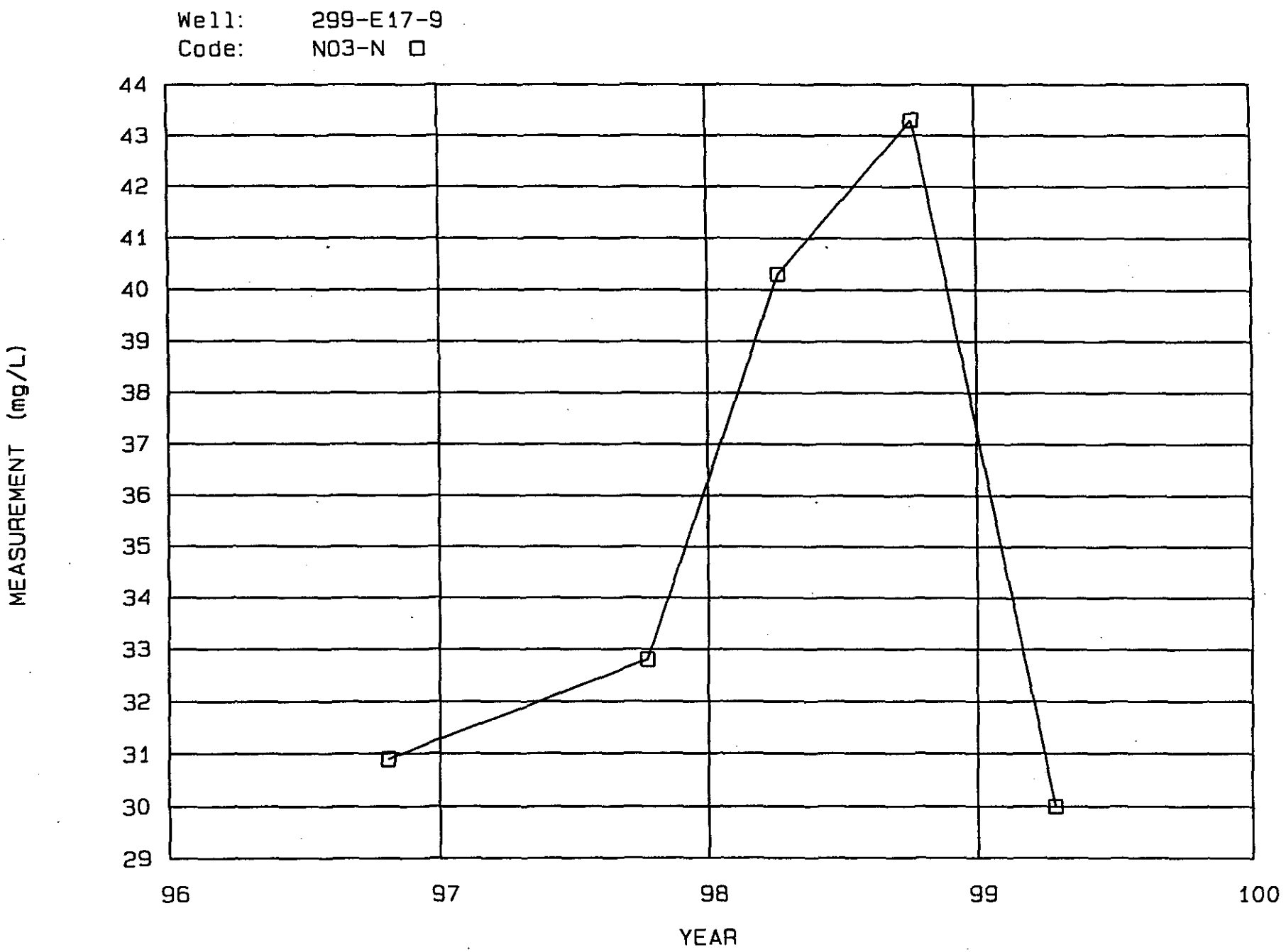
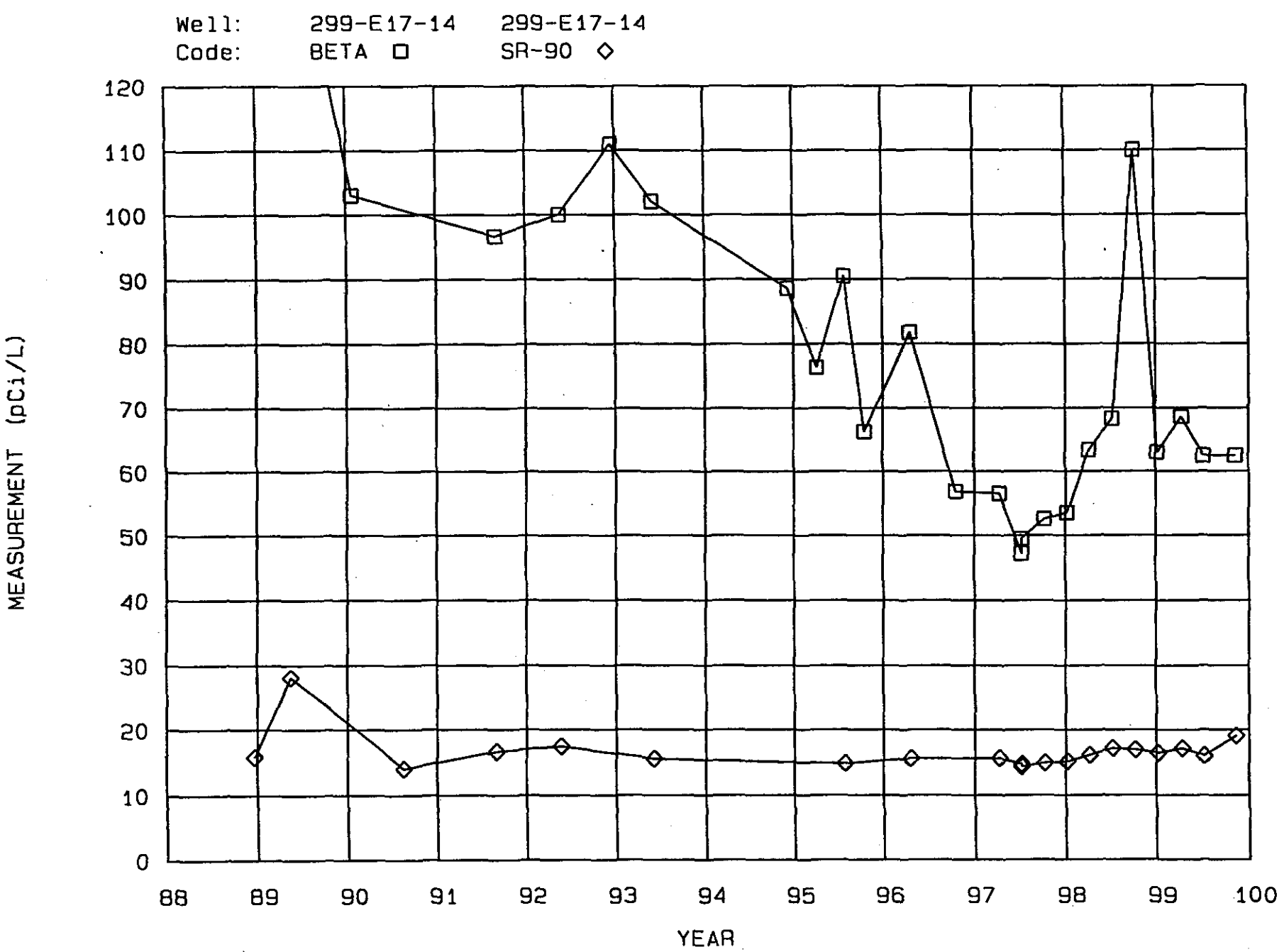


Figure 2.9-18. Hydrographs of Wells at Waste Management Area A-AX Using NAVD88

Nitrogen (In Nitrate)



Stontium-90 and Gross Beta



Comparison of Maximum Carbon Tetrachloride Rebound Concentrations Monitored at 200-ZP-2 Soil Vapor Extraction Sites FY 1997 - FY 2000

Attachment 6

200-ZP-2 Location (Well or Probe) /feet bgs	Site	Zone	November 1996 - July 1997 Maximum Rebound Carbon Tetrachloride (ppmv)	months* of rebound	October 1997 - September 1998 Maximum Rebound Carbon Tetrachloride (ppmv)	months* of rebound	July 1998 - September 1999 Maximum Rebound Carbon Tetrachloride (ppmv)	months* of rebound	July 1999 - July 2000 Maximum Rebound Carbon Tetrachloride (ppmv)	months* of rebound
79-03/ 5 ft	Z-18	1	0	8	0	3	0	12		
79-06/ 5 ft	Z-1A	1	not measured		not measured		1.4	12		
79-11/ 5 ft	Z-1A	1	0	8	0	6	2.9	12		
86-05/ 5 ft	Z-9	1	not measured		not measured		0	3		
86-05-01/ 5 ft	Z-9	1	not measured		not measured		0	3		
86-06/ 5 ft	Z-9	1	1.3	8	0	9	1.9	6		
87-05/ 5 ft	Z-1A	1	not measured		0	3	1.0	12		
87-09/ 5 ft	Z-1A	1	not measured		1.5	3	2.6	12		
94-02/ 5 ft	Z-9	1	0	8	not measured		1.4	3		
95-11/ 5 ft	Z-9	1	0	8	2.1	9	2.5	6		
95-12/ 5 ft	Z-9	1	1.1	8	1.5	9	1.3	6		
95-14/ 5 ft	Z-9	1	not measured		not measured		0	3		
CPT-13A/ 9 ft	Z-1A	2	not measured		0	6	1.0	12		
CPT-16/ 10 ft	Z-9	2	not measured		0	9	1.5	6		
CPT-17/ 10 ft	Z-9	2	not measured		4.2	9	5.1	6	5.1	13
CPT-18/ 15 ft	Z-9	2	not measured		6.5	9	5.0	6	5.2	13
CPT-31/25 ft	Z-1A	2	not measured		0	6	0	12		
CPT-16/ 25 ft	Z-9	2	not measured		not measured		not measured		2	13
CPT-32/ 25 ft	Z-1A	2	not measured		9.1	6	10	12	9.4	10
CPT-30/ 28 ft	Z-18	2	not measured		not measured		3.2	12	1.4	10
CPT-13A/ 30 ft	Z-1A	2	2.2	8	not measured		not measured		3.4	10
CPT-7A/ 32 ft	Z-1A	2	not measured		2.3	6	5.4	12	6.2	10
CPT-27/ 33 ft	Z-9	2	1.2	8	not measured		not measured		1.6	13
CPT-1A/ 35 ft	Z-18	2	2.0	8	1.4	3	3.0	12	4.2	10
CPT-33/ 40 ft	Z-1A	2	not measured		2.0	3	2.6	12		
CPT-34/ 40 ft	Z-18	2	2.3	8	not measured		1.7	12		
CPT-21A/ 45 ft	Z-9	2	65.6	8	52.7	9	57	3	94	13
W15-220ST/ 52 ft	Z-9	2	2	8	not measured		1.6	3		
CPT-28/ 60 ft	Z-9	2	not measured		1.5	0	3.7	3		
CPT-9A/ 60 ft	Z-9	2	45.5	8	41.1	0	44	3	68	13
CPT-30/ 68 ft	Z-18	2	1.7	8	not measured		3.0	12		
CPT-13A/ 70 ft	Z-1A	2	5.2	8	not measured		5.6	12		
CPT-24/70 ft	Z-9	2	not measured		3.2	9	3.6	3		
W15-219SST/ 70 ft	Z-9	2	14.6	8	not measured		7.6	3		
CPT-31/ 76 ft	Z-1A	2	4.0	8	not measured		4.2	12		
CPT-33/ 80 ft	Z-1A	2	5.8	8	not measured		9.2	12		
W15-82/ 82 ft	Z-9	2	28.9	8	5.5	9	46	6	43	13
W15-95/ 82 ft	Z-9	2	not measured		15.3	9	39	6	24	13
CPT-21A/ 86 ft	Z-9	2	221	8	206	9	148	6	195	13
CPT-34/ 86 ft	Z-18	2	36.3	8	5.9	3	0	12		
W15-218SST/ 86 ft	Z-9	2	not measured		not measured		0	3		
CPT-28/ 87 ft	Z-9	2	280	8	230	9	203	6	205	13
CPT-1A/ 91 ft	Z-18	2	3.9	8	not measured		4.2	12		
CPT-4A/ 91 ft	Z-1A	2	not measured		7.7	3	14	12		
CPT-9A/ 91 ft	Z-9	2	103	8	34.5	9	72	3		
W18-252SST/ 100 ft	Z-1A	2	38.2	8	17.8	3	24	12		
W18-152/ 113 ft	Z-12	2	46.8	8	11.1	3	33	12	25	10
W15-217/ 115 ft	Z-9	3	797	8	630	9	561	6	442	13
CPT-24/ 118 ft	Z-9	3	44.6	8	37.7	9	37	6		
W15-220SST/ 118 ft	Z-9	4	21.9	8	not measured		36	3		
W18-158L/ 123 ft	Z-1A	3	not measured		143	3	492	12	196	10
W18-167/ 123 ft	Z-1A	3	323	8	79.7	3	228	12	248	10
W15-219SST/ 130 ft	Z-9	4	298	8	not measured		47	3		
W18-249/ 134 ft	Z-18	3	206	8	20.4	3	215	12	176	10
W18-248/ 136 ft	Z-1A	3	288	8	86.3	3	177	12	186	10
W15-219SST/ 155 ft	Z-9	5	59.6	8	not measured		24	3		
W15-220SST/ 185 ft	Z-9	5	14.5	8	not measured		13	3		
W15-6L/ 189 ft	Z-9	6	22.6	8	17.8	9	1.3	6		
W15-9L/ 189 ft	Z-9	6	18.3	8	15.0	9	15	6	14	13
W18-7/ 200 ft	Z-1A	6	28.5	8	17.3	3	29	12		
W18-6L/ 208 ft	Z-1A	6	36	8	31.3	6	15	12		
W18-12/ 210 ft	Z-18	6	not measured		3.8	3	19	12		

* - based on location (Z-1A/18/12 or Z-9) of monitoring point; specific points may be beyond SVE zone of influence during particular operating configurations

- Z-18 and Z-12 wells off-line Oct 96 - Apr 98
- CPT-1A, CPT-9A, and possibly CPT-7A appeared to be beyond SVE zone of influence in Oct 96 based on differential pressure (BHI-01105, p. 6-1)
- CPT-9A, CPT-21A, CPT-28 beyond SVE zone of influence in May 96 based on CCl_4 concentrations and airflow modeling based on measured vacuums (BHI-01105, p. 6-1)

Carbon Tetrachloride Rebound Concentrations
Monitored at 200-ZP-2 Soil Vapor Extraction Sites
July 1999 - July 2000

200-ZP-2 Location (Well or Probe) /feet bgs	Site	Zone	07/30/99 CCl4 (ppmv)	09/14/99 CCl4 (ppmv)	9/28/99 CCl4 (ppmv)	10/26/99 CCl4 (ppmv)	11/30/99 CCl4 (ppmv)	12/29/99 CCl4 (ppmv)	01/25/00 CCl4 (ppmv)	03/07/00 CCl4 (ppmv)	06/02/2000 CCl4 (ppmv)	06/27/2000 CCl4 (ppmv)	07/24/2000 CCl4 (ppmv)
CPT-17/ 10 ft	Z-9	2	2.1	2.6	2.3	1.7	3.1	2.6	2.9	1.7	5.1	3.4	4.17
CPT-18/ 15 ft	Z-9	2	1.3	3.5	0	1.8	1.6	4.3	2.8	2.6	5.2	3.8	1.99
CPT-16/ 25 ft	Z-9	2				0	0	0	0	0	0	1.6	1.35
CPT-32/ 25 ft	Z-1A	2				0	0	1.5	3.8	9.4	8.6	7.2	8.08
CPT-30/ 28 ft	Z-1A	2				0	1.0	1.4	0	0	0	0	0
CPT-13A/ 30 ft	Z-1A	2				0	0	1.6	1.1	2.1	2.5	3.4	2.46
CPT-7A/ 32 ft	Z-1A	2				2.3	1.9	2.8	2.3	4.4	4.7	6.2	3.88
CPT-27/ 33 ft	Z-9	2				1.1	0	1.2	1.2	1.3	1.6	1.3	1.21
CPT-1A/ 35 ft	Z-12	2				2.5	3.1	2.8	4.1	3.3	4.2	3.7	3.72
CPT-21A/ 45 ft	Z-9	2	51.7	56.6	42	50.3	78	70.4	81.6	54.0	94	88.7	91.4
CPT-9A/ 60 ft	Z-9	2	----- (a)	43.9	44.0	32.9	39.3	43.5	38.1	33.2	43.9	67.6	40.3
W15-82/ 82 ft	Z-9	2	----- (a)	42.5	38.1	35.7	23.4	21.2	19.0	29.8	25.5	23.5	25.5
W15-95/ 82 ft	Z-9	2	----- (a)	8.3	7.6	9.0	11.2	12.0	14.5	13.2	21.2	21.7	23.7
CPT-21A/ 86 ft	Z-9	2	66.6	12.6	123	90.7	133	123	141	113	195	186	169
CPT-28/ 87 ft	Z-9	2	49.3	151	105	104	170	180	181	69.7	205	165	174
W18-152/ 113 ft	Z-12	2				1.8	22.1	24.7	17.7	3.7	22.9	3.1	1.8
W15-217/ 115 ft	Z-9	3	68.6	267	26.3	204	317	370	400	92.0	442	358	185
W18-158L/ 123 ft	Z-1A	3				79.6	103	134	132	152	134	196	186
W18-167/ 123 ft	Z-1A	3				88.8	115	144	109	104	248	227	216
W18-249/ 134 ft	Z-18	3				74.8	132	173	149	60.0	176	137	78.3
W18-248/ 136 ft	Z-1A	3				130	96.7	85.5	110	130	183	186	170
W15-9L/ 189 ft	Z-9	6	----- (a)	10.3	1.1	8.6	12.0	12.1	14.4	9.0	12.3	11.9	11.0

(a) sample pump failure

0849171